

Maria Micha-Screttas

Emeritus Researcher

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Curriculum Vitae – Current Research Interests

Education and qualifications

1968: Diploma in Pharmacy, University of Athens

1972: PhD in Pharmaceutical Chemistry, University of Athens

Appointments

1972-1973 : Researcher, NRCPS "Demokritos"

1973: Researcher, National Hellenic Research Foundation

1985 (6 months): Visiting researcher, Wayne State University, Detroit, Michigan

2000-2012: Research Director, Institute of Organic and Pharmaceutical Chemistry

2012-present: Emeritus Research Director, Institute of Biology, Pharmaceutical Chemistry and Biotechnology

Research Interests

Over 30 years experience in the field of Organic and Organometallic Chemistry and especially in the study of paramagnetic organometallic compounds and radical anions by multinuclear NMR.

Current research interests are focused on the synthesis of :

- design and synthesis of novel organic-organometallic compounds with applications in material science such as compounds with non-linear optical properties and as near infrared dyes
- design and synthesis of bioactive molecules and specifically with antioxidant activity
- recently we have initiated research activities in the field of dendrimer chemistry through the design and synthesis of new dendritic compounds with biomedical applications *such as drug delivery systems, as potent neuroprotective agents* acting as iron chelators, antibacterial activity. In parallel we plan exploit the newly synthesised dendritic molecules for applications in material science *e.g* for toxic metal complexation and in solid phase synthesis by increase the loading capacity of commercial available materials.

Other Activities

- July 2001-March 2003 : Depute Director of IOPC
- April 2009-2011 : Depute Director of IOPC
- 2007-2008 Guest Editor of *Current Topics in Medicinal Chemistry* Title of the issue: "Biomedical Applications of Dendrimers" **2008**, Vol. 8, No. 14
- Member of basic team involved in the preparation of the proposal of Cost Action (TD0802), with the title: "Biomedical applications of Dendrimers"

Fellowships

1968-1972 : NRCPS, «Democritos» for PhD studies

1964-1967 : State fellowship (IKY) for undergraduate studies

Funded Programmes

- *Coordinator and Scientist in Charge* for the IOPC programme for the Center of Excellence Research programme with the title; "Novel strategies Against Neurodegeneration" 2002-2005, (General Secretariat for Research and Technology) 200.000 €
- *Coordinator and Scientist in Charge* for the IOPC programme for the Center of Excellence Research programme with the title: "Design and Synthesis of Bioactive Molecules" (2005-2008) (General Secretariat for Research and Technology) 97.200 € (after the death of IOPC's Director Dr. Nikos Oikonomakos)

Participation in Joint Research Programmes

- "Conjugated Ladder-Type Oligomers and Polymers Containing Fused Six- and Five-Membered Rings" - Human Capital and Mobility Network (1/9/93-31/12/96)
The network comprised eight groups from the UK, Greece, Portugal, Italy and Germany.
- "Simple and Mixed Metal Alkyls, Alkoxides and Amides in Synthesis and Catalysis and as Precursors for Ceramic and Polymeric Materials" - Human Capital and Mobility Network (1/12/93-31/3/97)
The network was coordinated from the National Hellenic Research Foundation and comprised nine groups from Greece, UK, Ireland, Spain, France, Germany, The Netherlands
- "Design, Synthesis and Study of Novel Non-linear Optical Materials" - Training and Mobility of Researchers Network (1/10/96-30/9/99)
The network is being coordinated from the National Hellenic Research Foundation and comprises nine groups from Greece, UK, Ireland, France, Germany and Sweden.
- "Synthesis of Compatible Organic Additives for the Protection of Coloured Polyester Fibres from Photochemical Bleaching" Operational Programme for Research and

Technology (EPET/YPER 97). A collaboration between the National Hellenic Research Foundation and VIOCHROM Ltd.

- "Design, Synthesis and Study of Novel Organometallic Near Infrared Dyes"
Marie Curie Intra-European Fellowships (1/2/2004-31/1/2006)
- "Solid Phase Phospholipid and Dendrimer Synthesis"
Marie Curie Host Fellowships for the Transfer of Knowledge (ToK) (1/2/2005-31/1/2009)
- REGPOT-2009-1 (FP7)-"ARCADE" (GA 245866)
"Advancement of Research Capability for the Development of New Functional Compounds"

Publications

- C. Villalonga-Barber, K. Vallianatou, S. Georgakopoulos, B. R. Steele, M. Micha-Screttas, E. Levin, N. G. Lemcoff, *Tetrahedron*, **2013**, *69*, 3885-3895. "Synthesis, characterisation, electronic spectra and electrochemical investigation of ferrocenyl-terminated dendrimers"
- C. G. Screttas, B. R. Steele, M. Micha-Screttas, G. A. Heropoulos, *Org. Lett.*, **2012**, *14*, 5680-5683. "Aryllithiums with Increasing Steric Crowding and Lipophilicity Prepared from Chlorides in Diethyl Ether. The First Directly Prepared Room-Temperature-Stable Dilithioarenes"
- K. Gardikis, M. Micha-Screttas, C. Demetzos, B. R. Steele, *Curr. Med. Chem.*, **2012**, *19*, 4913-4928 "Dendrimers and the development of new complex nanomaterials for biomedical applications"
- C. Koukoulitsa, S. Durdagi, E. Siapi, C. Villalonga-Barber, X. Alexi, B. R. Steele, M. Micha-Screttas, M. N. Alexis, T. Mavromoustakos, *Eur. Biophys. J.* 2011, *40*, 865-875. "Comparison of thermal effects of stilbenoid analogs in lipid bilayers using differential scanning calorimetry and molecular dynamics. Correlation of their thermal effects and topographical position with antioxidant activity"
- C. Villalonga-Barber, A. K. Meligova, X. Alexi, B. R. Steele, C. E. Kouzinos, C. G. Screttas, E. S. Katsanou, M. Micha-Screttas, M. N. Alexis, *Bioorg. Med. Chem.* **2011**, *19*, 339-351. "New hydroxystilbenoid derivatives endowed with neuroprotective activity and devoid of interference with estrogen and aryl hydrocarbon receptor-mediated transcription"
- K. Gardikis, S. Hatziantoniou, M. Bucos, D. Fesas, M. Signorelli, T. Felekis, M. Zervou, C.G. Screttas, B.R. Steele, M. Ionov, M. Micha-Screttas, B. Klajnert, M. Bryszewska, C. Demetzos. *J. Pharm. Sci.* **2010**, *99*, 3561-3571. "New Drug Delivery Nanosystem Combining Liposomal and Dendrimeric Technology (Liposomal Locked-In Dendrimers) for Cancer Therapy"

- M. Bucos, C. Villalonga-Barber, M. Micha-Screttas, B. R. Steele, C. G. Screttas, G. A. Heropoulos, *Tetrahedron*, **2010**, *66*, 2061-2065. "Microwave assisted solid additive effects in simple dry chlorination reactions with N- chlorosuccinimide"
- K. Gardikis, S. Hatziantoniou, M. Signorelli, M. Pusceddu, M. Micha-Screttas, A. Schiraldi, C. Demetzos, D. Fessas, *Colloids Surf. B: Biointerfaces*, **2010**, *81*, 11-19. "Thermodynamic and structural characterization of Liposomal-Locked in-Dendrimers as drug carriers"
- C. Villalonga-Barber, M. Micha-Screttas, B. R. Steele, A. Georgopoulos, C. Demetzos, *Curr. Top. Med. Chem*, **2008**, *8*, 14,1294-1309, "Dendrimers as Biopharmaceuticals: Synthesis and Properties"
- M. Micha-Screttas, H. Ringsdorf, *Curr. Top., Med. Chem*, **2008**, *8*, 14, 1294-1309, "Polymer Science and Polymer Therapeutics: Macromolecules, Dendrimers and Nanomedicine."
- F. Wiesbrock, C. Patteux, T. K. Olszewski, A. Blanrue, G. A. Heropoulos, B. R. Steele, M. Micha-Screttas, T. Calogeropoulou, *Eur. J. Org. Chem.* **2008**, 4344-4349. "Solution-Phase Synthesis and Scale-Up of 1st Generation Tetraester-Dendritic Branches Involving Microwave Irradiation and/or Ultrasound"
- G. Skretas, A. Meligova, C. Villalonga-Barber, D. J. Mitsiou, M. N. Alexis, M. Micha-Screttas, B. R. Steele, C. G. Screttas, D. W. Wood, *J. Am. Chem. Soc.*, **2007**, *129*, 8443-57. "Engineered chimeric enzymes as tools for drug discovery:Generating reliable bacterial screens for the detection, discovery and assessment of estrogen receptor modulators"
- B. R. Steele, S. Georgakopoulos, M. Micha-Screttas and C. G. Screttas, *Eur. J. Org. Chem.* **2007**, 3091-96. "Synthesis of new sterically hindered anilines"
- B. R. Steele, C. Villalonga-Barber, M. Micha-Screttas, C. G. Screttas, *Tetrahedron Lett.* **2006**, *47*, 2093-2097. "Selective catalytic carbanionic ethylation of methylphenols: influence of catalyst and substitution pattern"
- C. Villalonga-Barber, B. R. Steele, V. Kovač, M. Micha-Screttas, C. G. Screttas, *J. Organomet. Chem.* **2006**, *691*, 2785-92. "New stable, isolable triarylmethyl based dyes absorbing in the near infrared"
- K. Gardikis, M. Micha-Screttas, B. R. Steele, C. Demetzos, *Pharmakeftiki*, **2006**, *19*, IV, 89-92, "An Overview of Dendrimers and their Biomedical Applications"
- C. G. Screttas, G. A. Heropoulos, M. Micha-Screttas, B. R. Steele, *Tetrahedron Lett.* **2005**, *46*, 4357-4360 "Medium-dependent lithiated side products in the reductive lithiation of allylic phenyl thioethers. Diethyl ether versus tetrahydrofuran"

- A. Lazaridou, C. G. Biliaderis, M. Micha-Screttas, B. R. Steele, *Food Hydrocolloids*, **2004**, *18*, 837-55. "A comparative study on structure–function relations of mixed linkage, linear-D-glucans"
- B. R. Steele, M. Micha-Screttas and C. G. Screttas, *Tetrahedron Lett.*, **2004**, *45*, 9537-9540. "Synthesis and properties of 1-bromo-2,3,5,6-tetrakis(3-pentyl)benzene : a highly sterically hindered aryl bromide"
- D. P. Catsoulacos, B. R. Steele, G. A. Heropoulos, M. Micha-Screttas, C. G. Screttas, *Tetrahedron Lett.*, **2003**, *44*, 4575-4578. "An iminophosphine dendrimeric ligand and its evaluation in the Heck reaction."
- C. G. Screttas, G. A. Heropoulos, M. Micha-Screttas, B. R. Steele, D. P. Catsoulacos, *Tetrahedron Lett.*, **2003**, *44*, 5633-5635 "Reductive lithiation of alkyl phenyl sulfides in diethyl ether. A ready access to α,α' -dialkylbenzylolithiums".
- B. R. Steele, M. Micha-Screttas, C. G. Screttas, *Appl. Organomet. Chem.* **2002**, *16*, 501-505. "Applications of novel sterically demanding aromatics in organometallic synthesis"
- M. Micha-Screttas, C. G. Screttas, B. R. Steele, G. A. Heropoulos, *Tetrahedron Lett.* **2002**, *43*, 4871-73. "Chemical and physical evidence for metal-metal interchange between lithium alkoxides and di-*n*-butylmagnesium"
- M. Micha-Screttas, G. A. Heropoulos, B. R. Steele, *Mag. Res. Chem.* **2001**, *39*, 586-592. "Stability of alkali metal monosubstituted benzophenone radical anions with respect to solvent perturbations"
- C. S. Salteris, I. D. Kostas, M. Micha-Screttas, G. A. Heropoulos, C. G. Screttas, A. Terzis, *J. Org. Chem.* **1999**, *64*, 5589-5592. "*ortho*-Directed lithiation of ω -phenoxyalcohols"
- C. S. Salteris, I. D. Kostas, M. Micha-Screttas, G. A. Heropoulos, C. G. Screttas, A. Terzis, *Main Group Met. Chem.* **1999**, *22*, 427-434. "*ortho*-Directed lithiation of ω -phenoxyalkanethiols and *N,N*-dimethyl, ω -phenoxyalkaneamines. Crystal structure of bis[σ [(dimethylamino) ethoxy]phenyl]mercury"
- C. S. Salteris, I. D. Kostas, M. Micha-Screttas, B. R. Steele, G. A. Heropoulos, C. G. Screttas, A. Terzis, *J. Organomet. Chem.*, **1999**, *590*, 63-70. "Synthesis of lithium ω -(*m*- and *p*-lithiophenoxy)alkoxides modified with magnesium 2-ethoxyethoxide. Crystal structures of bis [4-(2-hydroxyethoxy) phenyl]mercury and bis[4-(3-hydroxypropoxy)phenyl]mercury"
- M. Micha-Screttas, G. A. Heropoulos, B. R. Steele, *J. Chem. Soc Perkin Trans. 2*, **1999**, 1443-1446. "Evidence for a concentration dependent $^{6(7)}\text{Li}$ NMR contact shift in tetrahydrofuran solutions of lithium naphthalene radical anion and the effect of added $^{6(7)}\text{LiCl}$ "

- M. Micha-Screttas, G. A. Heropoulos, B. R. Steele, *J. Chem. Soc Perkin Trans. 2*, **1999**, 2685-2690. "Interaction between alkali metal aromatic ketone radical anions and the chlorides of lithium and magnesium in solution. A case of a carbon-carbon bond strengthening through complex formation"
- A. Detsi, M. Micha-Screttas and O. Igglessi-Markopoulou, *J. Chem. Soc. Perkin Trans. 1* **1998**, 2443. "Synthesis of N-alkoxycarbonyl-3-substituted tetramic acids and functionalized enols *via* C- acylation reactions of active methylene compounds with N-hydroxysuccinimide esters of N-alkoxycarbonyl- α -amino acids"
- C. G. Screttas, M. Micha-Screttas, B. R. Steele, *J. Organomet. Chem.* **1997**, 536, 149-163. "The *tert*-butyl chloride-lithium naphthalene radical anion and *tert*-butyllithium-naphthalene systems. Mechanism of metallation"
- C. G. Screttas, G. I. Ioannou, M. Micha-Screttas, *J. Organomet. Chem.* **1996**, 511, 217-225, "Stoichiometry of Protonation of Aromatic Hydrocarbon Radical Anions by Weak Proton Donors. A Marked Discrepancy Between the Number of Protons Used and those Incorporated into the Aromatic Structure".
- C. G. Screttas, M. Micha-Screttas, *J. Org. Chem.*, **1991**, 56, 1615. "Some Properties and trends of enthalpies of vaporization and of Trouton's ratios of organic compounds. Correlation of enthalpies of vaporization and of enthalpies of formation with normal boiling points".
- C.G. Screttas, M. Micha-Screttas, *Bull. Soc. Chim. Belg.* **1991**, 100, 199. "Spectroscopic electronegativities of halogens are transferable and additive parameters. Examples of correlations with thermochemical and nuclear magnetic resonance spectroscopic data"
- M. Micha-Screttas, *Mag. Res. Chem.* **1990**, 28, 952-955. "Spectroscopic electronegativities correlated with the ^{13}C NMR shifts of metal (Ia, IIa, IIIa) 2-ethoxyethoxides".
- F. S. Varveri, J. Nikokavouras, A. E. Mantaka-Marketou, M. Micha-Screttas, *Monats. Chemie*, **1989**, 120, 967-971. "Synthesis of terminally substituted 9-alkylidene-10-methyl acridans"
- C. G. Screttas, M. Micha-Screttas, *J. Org. Chem.*, **1989**, 54, 5132. "Correlation of thermochemical data with gas-phase ionization potentials"
- C. G. Screttas, M. Micha-Screttas, *J. Am. Chem. Soc.*, **1987**, 109, 7574. "Radical anions in hydrocarbon media. interaction between unsolvated and/or solvated radical anions and metal alkoxides. Evidence for cation-dependent clustering of ketyl anions at high concentrations"
- C. G. Screttas, M. Micha-Screttas, *J. Organomet. Chem.*, **1986**, 316, 1. "Hexane-soluble complexes of alkyl- and alkenyl -sodium compounds with magnesium alkoxides".

- C. G. Screttas, M. Micha-Screttas *J. Organomet. Chem.*, **1985**, 290, 1. "The diphenylmagnesium/alkali metal alkoxide system. Hydrocarbon soluble organoalkali metal reagents".
- C. G. Screttas, M. Micha-Screttas, *J. Organomet. Chem.*, **1985**, 292, 325. "Preparation of solvated and/or unsolvated simple and mixed diarylmagnesiums".
- C. G. Screttas, M. Micha-Screttas, *Organometallics*, **1984**, 3, 904. "Hydrocarbon-soluble organoalkali-metal reagents. preparation of alkyl derivatives".
- C. G. Screttas, M. Micha-Screttas, *J. Org. Chem.* **1983**, 48, 153. "Paramagnetic solvent NMR shifts in radical anion solutions 2. Some cation dependent phenomena in concentrated solutions of aromatic hydrocarbon radical anions and dianions".
- C. G. Screttas, M. Micha-Screttas, *J. Org. Chem.* **1983**, 48, 252. "Paramagnetic solvent NMR shifts in radical anion solutions 3. A kinetic method for measuring molar paramagnetic solvent shifts of unstable of unstable radical anions"
- C. G. Screttas, M. Micha-Screttas, *J. Phys. Chem.* **1983**, 87, 3844. "Paramagnetic Solvent NMR Shifts in Radical Anion Solutions 4. Carbon-13 Contact Shifts and Mechanism of Spin Density and/or Electron Transfer to Substrate".
- C. G. Screttas, M. Micha-Screttas, *J. Organomet. Chem.* **1983**, 252, 263. "Single-Titration Method for the Determination of Lithium Naphthalenide in Tetrahydrofuran".
- C. G. Screttas, M. Micha-Screttas, C. T. Cazianis, *Tetrahedron Lett*, **1983**, 24, 3287. "The Benzilic Ester Rearrangement. Evidence for a SET Pathway in Benzilic Ester and/or acid Rearrangement".
- C. G. Screttas, M. Micha-Screttas, *J. Org. Chem.* **1982**, 47, 3008. "Synthesis of Benzhydryl Ethers by C-C Forming Reaction Using Benzhydryl 2-Chloroethyl. A Method for Attaching a Protected 2- Hydroethyl Group to Benzylic Carbon".
- C. G. Screttas, M. Micha-Screttas, *J. C. S. Chem. Commun.* **1982**, 1168. "Carbon-13 Contact Solvent Shifts in Radical Anion Solutions. Mechanism of Spin Density Transfer to Solvent".
- C. G. Screttas, M. Micha-Screttas, *J. Org. Chem.* **1981**, 46, 993. "Structure of radical anions in solution as deduced from paramagnetic solvent shifts as molecular parameters for understanding structure, reactivity and solute-solvent interactions in ketyl anion solutions".
- C. G. Screttas, M. Micha-Screttas, *J. Org. Chem.* 1979, 44, 713. "Markownikoff two-step hydrolithiation of α -olefins.transformation of secondary and tertiary alkyl phenyl sulfides to alkyllithium reagents".

- C. G. Screttas, M. Micha-Screttas, *J. Org. Chem.* **1978**, *43*, 1064. "Hydrolithiation of α -olefins by regiospecific two-step process. Transformation of alkyl phenyl sulfides to alkyllithium reagents".
- M. Micha-Screttas, C. G. Screttas, *J. Org. Chem.* **1977**, *42*, 1462. "Preparation of alkyl phenyl sulfides by electrophilically catalysed displacement of certain nucleophiles by thiophenoxy group"

Patent

Number GR:1005435; Title: "New substituted stilbenoid derivatives with neuroprotective activity"; M. Micha-Screttas, C. Villalonga Barber, B. R. Steele, M. N. Alexis